Title: Space forms

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Abstract: In the presented thesis, we focus on foundations of Riemannian geometry. We are concerned with the problematics of the existence and uniqueness of metrics and connections on smooth manifolds. We explore the exponential map as a tool for a study of space forms – complete manifolds with constant sectional curvature. Using Jacobi fields we are going to prove the local case of the Killing–Hopf theorem, which describes isometries between space forms.

Keywords: Riemannian manifolds, sectional curvature, Jacobi field, Killing–Hopf theorem.